

REMARKS

The Office Action mailed April 22, 2008 has been carefully considered. Within the Office Action Claims 1-15 have been rejected. The Applicants have amended Claims 1, 12 and 13 and have cancelled Claim 15. Reconsideration in view of the following remarks is respectfully requested.

Rejection under 35 U.S.C. § 103

Claims 1-4 and 10-15 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable to Roitman et al. (U.S. 2003/0017305) in view Ringleben et al. (U.S. 2005/0173059) and/or Khan et al. (US 2004/0020595) and/or Chen (U.S. 6,251,219) and/or Watanbe (J.P. 2000/71422). This rejection is respectfully traversed.

In particular, it is stated in the office action that Roitman discloses the use of screen printing, and that it would have been obvious to combine Roitman with the screen printing techniques in the other cited references in reaching the claimed subject matter. The Applicants respectfully disagree.

In determining obviousness four factual inquiries must be looked into in regards to determining obviousness. These are determining the scope and content of the prior art; ascertaining the differences between the prior art and the claims in issue; resolving the level of ordinary skill in the pertinent art; and evaluating evidence of secondary consideration. Graham v. John Deere, 383 U.S. 1 (1966); KSR Int'l Co. v. Teleflex, Inc., No 04-1350 (U.S. Apr. 30, 2007) (“Often, it will be necessary . . . to look into related teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to

determine whether there was an **apparent reason** to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis **should be made explicit.”** (emphasis added).

Applicants’ Specification

The Applicants’ specification describes a process of applying glue to a substrate in which the recesses are prevented from receiving the glue based on the novel method described. In particular, Applicants’ process involves the use of a mask-less grid which comes into contact with the substrate. A mask-less grid does not have defined, obstructed areas or patterns in a the liquid deposit zone which are non-permeable to liquid. This differs from conventional screen printing which utilizes a masked-grid that has areas which do not allow liquid to permeate through. Masked-grids are often referred to as stencils in which the configuration of the stencil prevents liquid to permeate through the stenciled area. In bonding substrates, it is imperative in conventional screen printing that the masked-grid is aligned with the substrate such that the liquid is applied at the proper areas. This is an advantage of a mask-less grid in that the grid does not need to be aligned (to the precision of a masked-grid) with the substrate. Another advantage is that the same mask-less grid may be used with substrates having different upper coplanar plane configurations.

Applicants’ specification describes that typical screen printing processes involve the use of a mask or stencil, whereby the process applies to larger patterns, such as larger than 300 μm . (Applicants’ specification, Page 8, Lines 21-22). However, the use of a mask-less grid provides control of the substrate surface energy to achieve a glue coating that better conforms with the micro-patterns in the substrate without closing off the recesses in the substrate with glue.

(Applicants' specification, Page 8, Lines 23-27). It is the combination of the use of the mask-less grid along with treating the upper coplanar plane area which allows the glue to be applied to the surface of the substrate without the glue entering into the recesses.

Roitman

Roitman discusses that in certain embodiments a solvent-resistant adhesive is applied to one or both of the substrates which are attached to one another. In addition, Roitman merely describes in general terms that screen printing can be used to apply adhesive to the substrate. In fact, the only mention of the words, "screen printing" in Roitman is in the paragraph reproduced below:

To bond a stack of two or more plasma-treated substrates of PAEK, a solvent-resistant adhesive, such as a polyimide-based adhesive, is applied to all the surfaces facing each other or to just one of each of the surfaces facing each other (step 540). The adhesive can be applied using any deposition method, including, but not limited to, spin-casting, brushing, doctor-blade coating, spraying, **screen-printing**, jet-printing, dip-coating, Gravure coating and reverse roll coating. For example, in one embodiment, the amount of resin in a polyimide-based adhesive is diluted to approximately 10% solid polyamic acids in N-methyl pyrrolidone (NMP). Thereafter, the two PAEK substrates, at least one of which contains the adhesive, are brought together and held under a vacuum under pressure and heat to bond the two PAEK substrates together (step 550).

(Roitman, Paragraph 0085) (emphasis added).

Khan

Khan describes the use of a method of making a multi-well plate for assaying liquid samples. Khan discloses that the grid screen 30 is a masked screen (i.e. screen that includes a stencil), whereby the screen 30 places a stencil of the walls 14,16 of the upper frame 12. In

particular to Figures 4-6, Khan discloses that as the squeegee 34 is moved across screen 30, it pushes screen 30 against glass panel 20 with line contact as shown in FIG. 5. This squeezes adhesive 22 through apertures 32 leaving a grid pattern of adhesive on glass panel 20 as shown in FIG. 6. This pattern of adhesive includes intersecting lines of adhesive 22a, 22b corresponding respectively to intersecting walls 14, 16 and a surrounding line of adhesive 22c for sealing around the outer periphery of glass panel 20 and a corresponding periphery upper frame portion 12. (emphasis added). This is further supported in Figure 7 where the glass panel 20 is shown to have the adhesive in the grid pattern such that the outer periphery 22c as well as the intersecting lines 22a, 22b of adhesive match up exactly with the respective outer periphery and intersecting walls 14, 16 of the grid pattern in the upper frame 12. (Khan, Paragraph 0021; Figures 4-7) (emphasis added).

Ringleben

Regarding Ringleben, Ringleben cannot be used in a 35 U.S.C. 103 analysis as it is not considered prior art under 35 U.S.C. 102. Ringleben has a filing date of February 11, 2004, whereas the present application claims priority to French foreign application 03/50218 filed June 16, 2003. Applicants have included a certified statement that the present application is an accurate translation of the priority application. Accordingly, the filing date of the present application predates that of Ringleben and thus, Ringleben cannot be used as prior art.

Chen

Chen discloses a method for assembling electronic devices. In particular, Chen expressly states that in a screen printing process, a screen that is generally impermeable to adhesive has adhesive placed on it. The screen includes a pattern of holes formed on it, and these holes

correspond to desired locations of circuit components on the substrate. (Chen, Col. 1, Lines 25-37). In addition, Chen expressly teaches away from using screen pattern techniques in stating that although screen printing works well on flat substrates, screen printing “does not work well on multi-level substrates or substrates that include ridges or cavities.” In fact, “[o]n substrates with such surface irregularities, it is difficult for the screen to remain in contact with the substrate as the squeegee passes over the screen. As a result, the adhesive may not be properly transferred from the screen to the substrate. (Chen, Col. 1, Lines 38-48). Considering that Chen teaches away from the claimed embodiments as well as the cited references, one skilled in the art would not have the motivation to use Chen in reaching the claimed embodiments.

Watanabe

Watanabe discloses a screen 24 having an opening in contact with an upper surface 6, whereby adhesive agent is applied to the surface 6 to allow substrates 10 and 5 to be placed thereon. One skilled in the art would not use Watanabe in reaching the claimed subject matter as Watanabe merely teaches applying the adhesive through an opening in the screen 24 and then removing the screen to leave the adhesive at the point of the opening. However, there is no teaching or suggestion of recesses, as specified in Claims 1 and 13, and thus no motivation to one skilled in the art to use a mask-less grid to prevent glue from entering recesses. For at least these reasons, one skilled in the art would not use Watanabe in reaching the claimed subject matter.

No motivation to combine references

One skilled in the art would not utilize Roitman in attempting to solve the problem that Applicant’s method solves. In particular, one skilled in the art would realize that Roitman does not seek to resolve the problem of preventing glue from entering the recesses in the substrate

considering that Roitman mentions that other possible ways of applying the adhesive include “spraying,” “dip-coating,” and “brushing.” These methods mentioned in Roitman certainly do not prevent glue from entering the recesses. Therefore, Roitman does not teach or suggest a mask-less grid that prevents glue from entering the recesses, as claimed in Claims 1 and 13. It should be noted that the office action has not provided any **apparent reason** besides the mere mention of “screen printing” in Roitman to establishing motivation to Ouse a mask-less grid. See KSR. Accordingly, a *prima facie* case of obviousness has not been established and withdrawal of the rejection is respectfully requested.

In addition, one skilled in the art would not be motivated to combine Roitman with Khan in reaching the claimed subject matter in Claims 1 and 13 to satisfy a proper obviousness rejection. Khan effectively admits using a screen 30 having apertures 32 in a grid pattern which is in contact with the upper frame portion 12. (Khan, Paragraph 0020). In other words, the screen 30 with grid pattern in Khan is considered a masked grid. In particular, Khan discloses that as the squeegee 34 is moved across screen 30, it pushes screen 30 against glass panel 20 with line contact as shown in FIG. 5. This squeezes adhesive 22 through apertures 32 leaving a grid pattern of adhesive on glass panel 20 as shown in FIG. 6. This pattern of adhesive includes intersecting lines of adhesive 22a, 22b corresponding respectively to intersecting walls 14, 16 and a surrounding line of adhesive 22c for sealing around the outer periphery of glass panel 20 and a corresponding periphery upper frame portion 12. One skilled in the art would not combine Roitman with Chen in reaching the claimed subject matter. Accordingly, Claims 1 and 13 is patentable over the combination of Roitman and Khan.

One skilled in the art would not combine Roitman with Chen in reaching the claimed subject matter. As stated above, Chen expressly teaches away from using screen pattern techniques in stating that although screen printing works well on flat substrates, screen printing

"does not work well on multi-level substrates or substrates that include ridges or cavities." In fact, "[o]n substrates with such surface irregularities, it is difficult for the screen to remain in contact with the substrate as the squeegee passes over the screen. As a result, the adhesive may not be properly transferred from the screen to the substrate. (Chen, Col. 1, Lines 38-48). One skilled in the art reading Chen would realize that Chen teaches away from the use of screen printing on a substrate having recesses. For at least these reasons, one skilled in the art would not have any apparent reason to combine Roitman with Chen in reaching the claimed subject matter in Claims 1 and 13. Accordingly, withdrawal of the rejection is respectfully requested.

One skilled in the art would not combine Roitman and Watanabe in reaching the claimed subject matter as Watanabe merely teaches applying the adhesive through an opening in the screen 24 and then removing the screen to leave the adhesive at the point of the opening. Instead, all that is disclosed in Watanabe is applying an adhesive onto a flat surface through an opening in a screen, and Watanabe does not provide for a mask-less grid which prevents glue from entering into a recess on the substrate. For at least these reasons, one skilled in the art would not combine Roitman and Watanabe in reaching the claimed subject matter, as the combination does not teach or suggest a mask-less grid which prevents glue from entering recesses.

Combination Does Not Teach or Suggest All Elements/Limitations

Assuming *arguendo* that one skilled in the art would attempt to combine the above references, the combination would not teach or suggest all the elements/limitations in Claims 1 and 13. The combination of references fail to teach or suggest a mask-less grid, as expressly recited in Claims 1 and 13. Additionally, the combination of references fail to teach or suggest depositing a film of glue droplets on the upper coplanar plane area without the film entering into the recesses, as recited in Claims 1 and 13. Further, none of the cited references teach or suggest

an upper coplanar plane including a first surface tension force associated therewith; the grid having a second surface tension force associated therewith, wherein the glue only transfers from the grid to the upper coplanar plane due to a predetermined difference in the surface tension forces, as recited in Claim 13. Considering that the combination of references do not teach or suggest each and every element/limitation in Claims 1 and 13, the claims are patentable. For at least these reasons, allowance of Claims 1 and 13 is respectfully requested.

Claims 2-12 are dependent on Claim 1 and Claim 14 is dependent on Claim 13. For at least the reasons stated above, Claims 1 and 13 are allowable over the combination of the cited references. Accordingly, Claims 2-12 and 14 are also allowable for being dependent on an allowable base claim.

Conclusion

It is believed that this reply places the above-identified patent application into condition for allowance. Early favorable consideration of this reply is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Please charge any additional required fee or credit any overpayment not otherwise paid or credited to our deposit account No. 50-1698. A three (3) month extension accompanies this Reply.

Respectfully submitted,

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